THE MAGNAVOX COMPANY, et al.,

Plaintiffs,

vs.

CHICAGO DYNAMIC INDUSTRIES and SEEBURG CORP.,

Defendants.

No. 74 C 1030 and 74 C 2510

BEFORE: Honorable JOHN F. GRADY, Judge,

Wednesday, January 5, 1977

10:00 o'clock a.m.

PRESENT:

MR. ANDERSON
MR. WILLIAMS

MR. GOLDENBERG
MR. RIFKIN

THE CLERK: 74 C 1030,74 C 2510, Magnavox vs. Chicago Dynamic Industries, case on trial.

THE COURT: Good morning, gentlemen.

MR. ANDERSON: Good morning, your Honor.

MR. GOLDENBERG: Good morning, your Honor.

MR. ANDERSON: Your Honor, as you will recall, at the beginning of the trial I indicated that we had prepared and filed with the court and served on the other side a proposed set of agreed facts relating to the history of development, in particular the Pong game. At that time we could not reach agreement, and the court indicated we should put in whatever was necessary to prove up that particular aspect of our case.

At this time I would like to hand up to the court a collection of portions of the deposition of Nolan Bushnell as Plaintiffs' Exhibit 101, and if I may, state briefly a summary of the facts that are in that and read from the last few pages.

I think the evidence that we have cited in this transcript -- you have a copy, Mr. Goldenberg.

MR. GOLDENBERG: I have a copy.

Your Honor, I am going to have an objection with respect to this. My only question is whether, as the court might recall, it said when we began that a formal offer would perhaps not have to be made, so it is only a question of the timing of my objection with respect to the

offer of this exhibit.

THE COURT: This is in regard to the derivation of Pong from Odyssey, is that correct?

MR. GOLDENBERG: That is correct, your Honor.

THE COURT: Why don't you go ahead and make your objection now, and I will rule on the objection.

MR. GOLDENBERG: My objection at this time, your Honor, is that this particular document which you have in front of you was not included on the exhibit list made available to us. We did not receive a copy of it until late yesterday, and whereas the court may want to receive it, I think a better way to do it would be for the court to receive an exhibit which would include all portions of Mr. Bushnell's testimony that either side believes to bear on the question.

THE COURT: I will do that. I will receive anything that you wish to supplement this with, or if you desire me to wait until I have a full document, I will do that too.

MR. GOLDENBERG: It would strictly be the court's wishes in the matter. My preference, I think perhaps you could guess, would be to have the court have a single document dealing with a particular subject.

THE COURT: Well, I am going to read this today anyway, in all likelihood. When do you think -- what I would probably do is read it sometime tomorrow. Would you have your part ready by tomorrow?

MR. GOLDENBERG: I am afraid I would not, your Honor.

THE COURT: All right.

MR. ANDERSON: Your Honor, I would just offer it and proceed.

I would like to proceed and just briefly summarize -- I believe it might be helpful to Mr. Goldenberg -- what I believe is unequivocally in the person --

THE COURT: Inasmuch as it is a deposition of the case, I think it is clearly admissible. If not having been specified as an exhibit, I am not impressed by that since it was a deposition of which everyone had notice.

MR. ANDERSON: I might say initially we had listed in the order -- the pretrial order as it now stands -- we listed Nolan K. Bushnell as a witness. We proposed the agreed statements of facts, and then we finally came to this easy solution.

THE COURT: Well, I will receive Plaintiff's Exhibit 101. I won't read it until I have received Mr. Goldenberg's supplement.

MR. GOLDENBERG: We will make every effort to get

that.

So that we might shorten this, this would also be the case with Exhibits 101 and 103.

MR. ANDERSON: Those are portions of the Rush and Harrison depositions. Again, your Honor --

THE COURT: Same issue?

MR. ANDERSON: Well, a different issue, your Honor. In this case we had taken Mr. Baer's testimony in court, and we had indicated that we felt that that was adequate on the proof of events at Sanders, and did not require corroboration.

Mr. Goldenberg indicated an unwillingness to agree that Mr. Baer's testimony on certain points did not require corroboration. We're putting the Rush and Harrison transcript portions into evidence in that context.

The defendants listed as their own exhibits the Rush and Harrison depositions, portions of which were not put in.

MR. GOLDENBERG: Portions of those. All we are asking for, your Honor, is essentially an opportunity to integrate and present in one document the depositions of those persons with respect to the matters for which they are being offered.

Mr. Anderson, 104 we have no intention of supplementing your portion here, so we will not have the

same request with respect to Mr. Etlinger's deposition.

MR. ANDERSON: That is only a couple of pages?

MR. GOLDENBERG: Right.

MR. ANDERSON: And with respect to the depositions that the defendants plan to put in in the course of the proceedings, we have been provided with similar assemblies, with a list of the portions relied upon by defendants.

We have not yet had an opportunity to prepare our responsive designations, and I suggest that the same procedure be followed with respect to those.

THE COURT: Well, why don't we do this: I have got enough documents up here as it is. Why don't I hand this back to you? I will receive all of these depositions, and I will read them at such time as they are complete.

MR. ANDERSON: Your Honor, if I may, before doing that, just as a part of our case, I would like to state what I believe is in them in a very terse summary form and read the last few pages of the Nolan Bushnell deposition collection.

I think the court will find that the portions included in this book, Plaintiff's Exhibit 101, will show that Atari, Incorporated, was formed in June of 1972 by Nolan K. Bushnell and two other people, Ted Daphne and Mr. Elkhorn. Mr. Bushnell holds a bachelor's degree in electrical engineering, and he said that the emphasis was

on computer design and logical design and certain system design.

Bushnell worked for Nutting Associates Amusement Games from 1970 until Atari was formed, and he prior to that time, from '63 to '68, worked for a company called Lagoon in Salt Lake City, where he ran a coin-operated game arcade, and he collected the games to be used, operated them, had 60 to 100 people working for him while he was in the arcade business.

Prior to that, in high school, he had worked for Barlow in Salt Lake City, in television repair. He did that all through his high school career.

He also had a coin-operated business for three years, up until 1968, when he moved to California.

He testified that he saw Space War demonstrated on an IBM or Univac computer in about 1965 while he was a student at Salt Lake at the University of Utah.

He then testified that after he moved to California he attended the Magnavox introductory demonstration of Odyssey in the Bay Area in California, in May of 1972, with another Nutting employee, with Rod Geiman.

Then after that, in June of '72, he formed Atari, Inc. with the three people I mentioned. After seeing Odyssey, Bushnell assigned Elkhorn to design a game to simulate tennis, and that portion is the only portion

that I would actually like to read into the record. It is the last few pages of the collection, beginning at page 96, under tab 2 of the book that I have handed up to the Court, and that testimony, with Mr. Williams interrogating Mr. Bushnell, reads as follows -- and I am reading directly from the abstracts or the portions of the testimony bound in Exhibit 101:

"Q Did you give Mr. Elkhorn the assignment of designing a simulated tennis game?

A Yes, I did.

Q How did you give him the assignment, was it orally or in writing?

A It was oral.

Q Do you know when you gave him that assignment?

A The day he came to work."

This is on page 111:

"Q Have you ever seen a demonstration game sold by Magnavox under the name Odyssey?

A Yes, I have.

Q When did you first see such a game?

A I saw it at some kind of a distributor meeting or showing that they had in, I think it was the Airporter Hotel by the San Francisco Airport, and I don't remember the exact date.

Q Do you remember the approximate date?

A No, I think Magnavox probably knows when it was better than I do.

Q Do you recall whether it was prior to the time that you entered into the written agreement with Bally?

A Yes, it was prior to that. It was while I was still employed at Nutting.

"Q So you must have seen it prior to the time that you instructed Mr. Elkhorn to develop the game which subsequently became Pong?

A That is true.

Q Did anybody else go with you to the distributors' meeting?

A Yes, I think it was either Mr. Ralston or Mr. Geiman, or maybe both.

Q Ralston?

A Yes, he was the sales manager for Nutting.

Q How do you spell Geiman?

A G-e-i-m-a-n, I think.

"Q Did you go there as part of your employment with Nutting?

A Yes, I did.

Q Were you asked to go there?

A Yes.

Q By whom?

A I think it was by Bill Nutting, I mean, either him or Geiman. They had heard about it, that it was a video game, and since we thought we were the only show in town, we thought we would like to see what was happening.

Q Do you recall what you saw at the demonstration?

A Yes, I saw a game. I believe I saw a handball game or, you know, the thing that they called handball, and the ping-pong game.

Q Did you see any other games at that demonstration?

A They had the rifle there, but it wasn't working.

Q Did you see any other games operating other than handball and ping-pong?

A No, I didn't.

Q Could you briefly describe the ping-pong game that you saw?

"A Well, it was, you know, the light spot that moved back and forth when you hit it with the paddle.

Q The light spot was on the face of the television screen?

A Right.

Q And the paddles were also displayed on the face of the television screen?

A Right.

Q How did they appear?

A They were square blobs.

Q Were there any other objects on the screen other than the paddles or the light spot?

A Not to my knowledge.

Q Was there a line down the center of the screen?

A I don't remember.

Q Did you play the game that you saw?

A Yes, I did.

Q Was there just one Odyssey unit being demonstrated or were there a number of them?

A I believe there was only one.

Q Which one of the games that you saw did you actually play?

A I think I played both of them.

"Q Do you recall how long you were at the show?

A No, I don't. It wasn't very long, a half hour."

Your Honor, we also place before the Court a copy of a log kept by Magnavox of that demonstration in the Bay area of California, and we have identified that in our exhibit list and hand that up as Plaintiff's Exhibit Number 8.

Plaintiff's Exhibit Number 8 shows the heading information on the first few pages, three pages, that this was a part of a Magnavox Profit Caravan 1972, held at the Airport Marina Hotel in Burlingame, California, which I understand is right at the San Francisco Airport. The dates were May 23, 24 and 25, 1972, as evidenced on the second page of the introductory document. The subject of the meeting is shown on the third page, and then we have clipped the two pages where Mr. Geiman and Mr. Bushnell signed the log. The first one bears the date 5-24-72, the name Rod Geiman, and the association, Nutting Associates, Mountain View, California.

The second one is clipped also. It is dated 5-24, and bears the signature Nolan K. Bushnell, which isn't readily readable, but his signature does

show in other documents that have been produced in this case and will be before the Court.

MR. GOLDENBERG: We will stipulate that that is his signature, your Honor.

MR. ANDERSON: All right, thank you.

The next item is the introduction of designated portions of the depositions of William T. Rusch and William L. Harrison. The plaintiff has marked these respectively Plaintiff's Exhibits 102 and 103. Perhaps I should just hold those until Mr. Goldenberg designates his portions.

THE COURT: Why don't you hold those?

MR. ANDERSON: The next item, your Honor, is the four agreements that have been designated in the pretrial order as Exhibits 92-A, 92-B, 92-C, and 92-D. Then we have added a 92-B-1 also.

The first agreement is a non-exclusive sublicense agreement for coin operated game devices, entered into on May 1, 1976 between The Magnavox Company and Midway Manufacturing Company, one of the former defendants in these actions.

It is a license agreement including the two patents in suit here and does involve the payment of monies from the licensee, Midway, to Magnavox.

THE COURT: Do you have any objection to that, Mr. Goldenberg?

MR. GOLDENBERG: No, your Honor, with respect to this entire group of agreements, we would like to have leave from the Court to call Mr. Briody as a witness to be examined about them, however.

THE COURT: Who is Mr. Briody?

MR. GOLDENBERG: Mr. Briody is the corporate patent counsel for Magnavox and negotiated these agreements, and in a number of cases actually signed them on behalf of the company.

I believe, and surely Mr. Anderson can speak for himself, but they are being offered to establish recognition of the patents in suit by the industry.

Perhaps Mr. Anderson wouldn't put it quite that way.

MR. ANDERSON: I think they go to the issue of commercial success, your Honor, and I suppose recognition would --

THE COURT: I see a hearsay problem, which is why I asked if you objected to them.

MR. GOLDENBERG: I think they should be offered through a witness, your Honor, and there is a witness.

THE COURT: I mean, for instance, in an ordinary lawsuit it is not permissible for the plaintiff to show

that a co-defendant settled out. This is a showing that a co-defendant settled out and acknowledged liability, but I can see where the issue here is perhaps different than that presented by the ordinary lawsuit. If recognition by the industry is one of the elements that is taken into consideration in these cases, then that is another matter.

MR. GOLDENBERG: I would concede, your Honor, that there are decisions which state this to be a factor.

THE COURT: If I were a defendant in such a case, I would feel that my rights to defend the case would be compromised by decisions that had been made by somebody else.

MR. GOLDENBERG: That is what is happening to me, and that is the reason why I think for the Court actually to understand what did happen here, the testimony of Mr. Briody should be heard by the Court, that he is the one that negotiated these agreements.

For instance, it is my belief and understanding that there are any number of companies which have refused to take licenses under these patents.

THE COURT: It seems to me that would be admissible along with this evidence. Would that be your position, Mr. Anderson?

MR. ANDERSON: Your Honor, we prepared an agreed

statement of facts, which included fact agreements that each of the four license agreements, the documents are true copies of agreements between Magnavox and the respective licensee. That was done some time ago.

In addition to that, of course, Mr. Goldenberg has had --

THE COURT: Authenticity is not an issue.

MR. GOLDENBERG: No.

THE COURT: It is a question of if this is admissible, what weight does it have and on what issue?

MR. ANDERSON: I think, your Honor, it goes to the issue of commercial success. Whether or not there was a civil action, I think these would be --

THE COURT: I have been involved in lawsuits as a lawyer where I was the last of the Mohicans and felt that my co-defendants had settled precipitously, and to their great embarrassment, my position was vindicated in the trial of the case.

MR. ANDERSON: I think in this case --

THE COURT: I am not saying that is going to happen or not happen here, but I have some problems with this category of evidence.

MR. ANDERSON: In this case two of the four exhibits are agreements including licenses involving Atari and Midway. The other two, Coleco and Sentronics,

have not been defendants in a civil action but took the licenses based upon other than a lawsuit.

I think, as Mr. Goldenberg has indicated, it is certainly common practice and accepted, I think, to put in evidence of licenses in support of patents and the commercial success of patents. Of course, that is considered a factor on the question of obviousness and on the questions of the validity and enforcement of the patents.

THE COURT: You see, I don't really see that it goes to that issue. Commercial success is demonstrated by the machine as a generic class, it seems to me.

These coin-operated machines and home TV machines have captured the imagination of many people in this country. The fact that Magnavox enters into licenses with people doesn't seem to me to add anything to what I already know about the commercial success of games played either on TV screens with the front end or without the front end.

It seems to me the only real purpose for this evidence is to imply that if these people folded their tents, Seeburg should also fold its tent. Really it amounts to both hearsay and opinion testimony on the issue of liability in this case, it seems to me.

Now, that is the way I regard it. I think you can see how much weight I am going to give it.

MR. ANDERSON: In view of your comment, your Honor, and in order to expedite the trial, for one thing --

THE COURT: I will receive it since there is no objection --

MR. ANDERSON: -- I will withdraw the four --

THE COURT: -- but I am very much of the view that each party is entitled to a trial on the merits of his own case, and it should not be either prejudiced or helped by what somebody else did.

MR.ANDERSON: I think taken in the light of your Honor's comments that perhaps, nonetheless, we will let them be in the record for whatever they are worth in your deliberations and consideration of the case.

THE COURT: All right.

MR. GOLDENBERG: With that, your Honor, can it be understood that we would be calling Mr. Briody in connection with this matter?

THE COURT: You may call him if you think it is necessary.

MR. GOLDENBERG: It perhaps would not be necessary if the plaintiffs' counsel would agree with me at this point that there are a number of companies which are manufacturing TV games which have not taken licenses under the patents.

MR. ANDERSON: Excuse me?

MR. GOLDENBERG: If you would agree to stipulate at this point that there are a number of companies manufacturing TV games, coin version, home version, which have not taken licenses under these patents?

MR. ANDERSON: Yes, I think, your Honor, we can stipulate that there are unlicensed infringers at the present time.

THE COURT: All right, I think I understand you both.

MR. GOLDENBERG: It is not wrapped up quite the way I wanted it, but I will accept it.

MR. ANDERSON: Then I will hand up to the court, with

that stipulation, in addition to Plaintiffs' Exhibit 92-A, which I think I have already handed up, 92-B, 92-B-1, which is a supplement to 92-B, as indicated on its face, 92-C and 92-D.

THE COURT: All right.

MR. ANDERSON: Your Honor, we also would like to place before the court Plaintiffs' Exhibit 104, which is a very brief portion or very brief abstract taken directly from the deposition of Sanders Associates, Inc., taken under the provisions of Rule 30(b)(6) on April 6, 1976. Mr. Louis Etlinger was the actual witness, and the deposition transcript included here is pages 1, 3, 43 and 44.

The purpose of including that is to put in before the court an agreement that was signed by Teleprompter, by Mr. Hubert J. Schlafley, whose deposition was taken in this case, of Teleprompter, on January 18, 1968, relating to the conditions of the confidence under which Teleprompter came to Sanders and looked at that breadboard, about which the court has heard testimony.

The Teleprompter confidential agreement was Exhibit 22-4-B during the deposition. Mr. Williams, what is the exhibit number now?

It is part of Plaintiffs' Exhibit 71, which is the Teleprompter negotiation file, which we will, I think for completeness, make the entire file just a part of the

record.

THE COURT: I have forgotten the significance of Teleprompter.

MR. ANDERSON: As you will recall, Mr. Baer testified that, I believe, two representatives of Teleprompter came to Sanders in January or February of 1968 --

THE COURT: Oh, yes.

MR. ANDERSON: -- and saw the breadboard demonstration of a TV game.

THE COURT: There was some question about a coin-operated machine at that point.

MR. ANDERSON: No, Teleprompter, of course, is in the cable business, CATV.

THE COURT: Cable, that's it, cable TV.

MR. ANDERSON: Mr. Baer testified that he was interested in exploring the possibilities of adapting his games to cable TV.

THE COURT: Right.

MR. GOLDENBERG: Your Honor, we have no intention of supplementing Mr. Etlinger's deposition.

MR. ANDERSON: That completes the plaintiffs' case, your Honor. We rest.

THE COURT: All right.

MR. GOLDENBERG: Your Honor, at this time we would like to move for a judgment on the record that the

plaintiffs have not proven by a preponderance of the evidence that the defendants' machines and apparatus infringe the patent in suit, and that, on the other hand, the defendants have established the invalidity of those patents.

THE COURT: All right, that motion will be denied.

MR. GOLDENBERG: Your Honor, at this time I would like to offer to the Court Defendants' Exhibit 15, which is a collection of documents dealing with the RCA pool game.

Under Tabs 1 through 12, there are certain documents and a motion picture film, which were marked as deposition exhibits during the course of depositions taken of three RCA employees.

Tabs 13 through 15 are selected portions of those depositions.

Tab 16 includes the agreed statement of facts between the parties which deals with the RCA demonstrations, and that is paragraph number 122 through 149, under Tab 16.

I would like to take a moment and briefly summarize what we believe this shows.

THE COURT: All right.

MR. GOLDENBERG: In the latter part of October, 1967, more than one year before the applications for either one of the patents in suit was filed -- so therefore as to be prior art in accordance with the provisions of 35 USC Section 102(b) -- RCA conducted an open house at its Princeton, New Jersey laboratories. The occasion was the 25th anniversary of the Sarnoff Research Center, named after David

Sarnoff, one of the early organizers and prime movers in RCA.

On the occasion of that open house, it was held in two parts. In a first part there were invited guests from industry, from government, and from universities and academic institutions. Tab 2 is a list of the people who were invited and identifies the institution or institutions with which they were associated.

Across the top of each page of the document under that tab there is certain shorthand words, like "OH," which stands for "Open House," on the 28th, "Sym" stands for symposium, and there were symposia.

So the first couple of days were for, I suppose you could call them, VIP's or distinguished guests. Then on Sunday of that week an open house was conducted for people invited by the employees of RCA. Each employee of RCA was given a group of tickets to pass out to his friends and neighbors and family, and they saw the same demonstrations that these distinguished guests had seen several days previously.

It is agreed between the parties that about 8,000 people attended that open house. One of the things that they saw was a demonstration of a pool game played on a cathode ray tube in conjunction with

a computer, which had been programmed to play the game.

The RCA witnesses, one of those, Mr. Tager -- and his deposition is under Tab 14 -- is the one who programmed the computer to play the game. He testified about how long it took him to do it and described the game. He further testified that he got the idea for playing the pool game as the result of attending various professional or technical conferences where this was a demonstration technique that he had seen used before. So he made no claim to originality for playing a pool game on a cathode ray tube in conjunction with a computer.

The cathode ray tube was of the X-Y deflection type. It did not use raster scans.

I think that would summarize what this would prove. Our contention with respect to it is that this was a public use, putting in the public domain this work and that, therefore, it is prior art.

THE COURT: Does it add anything, in your view, to the University of Michigan demonstration? Was that a public use?

MR. GOLDENBERG: That was a public use also, your Honor, in our view.

It adds this, quite honestly. It is perhaps to an extent cumulative, but it is evidence of

the commonality, if you will, of this technique, this ability. There is nothing unique that occurred in Princeton in 1967. It may have been unique in 1954, but by the time we get to 1967, it is by far from being unique and well able to be done in the art.

Then I would be less than candid if I didn't say another reason in presenting this to you is that we have a motion picture film. The testimony is that the motion picture film was taken by a crew of the British Broadcasting Corporation some months later, and after the film was taken, a copy of the film was made available to Mr. Tager, who had it in his custody.

He and Mr. Cook and Mr. Leckner all testified that before their depositions were taken, they saw the film. They had seen it earlier, but they saw it just before their depositions were taken, and actually I was in their company at that time, as was Mr. Williams, on behalf of Magnavox.

They all testified that the film actually depicts the game, accurately depicts the game as it was played at the time of the open house.

MR. GOLDENBERG: And therefore I would like the Court to see the film. I believe that it would be helpful to the Court.

THE COURT: All right.

Any objection?

MR. ANDERSON: No, your Honor. I think the film is not evidence of what happened at the show -- it was made months later -- other than the testimony of the witnesses who viewed it. I think there is no evidence that it was ever used for any commercial purpose. The witnesses didn't know that, and with that understanding --

MR. GOLDENBERG: I am sorry?

MR. ANDERSON: I said that the film that you have referred to was not made at the time of the open house in September of '67. As you said, I think months later, sometime in the next year. And also, I think there was no proof that it was ever used for any commercial purpose other than some vague understandings by these witnesses that it might have been.

MR. GOLDENBERG: That is correct. There is one further element, your Honor, with respect to the RCA pool game that I omitted, as to why I am presenting it to the court in addition to the Michigan pool game.

It actually displayed, through the use of electrical circuits, the sides and the pockets. They were

not marked on the screen of the TV tube, or cathode ray tube, as in the case of the Michigan game.

MR. ANDERSON: But I think it also is my understanding of the testimony that the game slowed down when the computer was busy and speeded up when it was not busy. It also was established, of course, as you mention, it did not use raster scan or horizontal or vertical sync or sweep signals or any of the aspects of timing that we discussed in this litigation.

MR. GOLDENBERG: That is correct, your Honor.

MR. ANDERSON: And also it does not use a hit or a hitting spot, or bouncing between hit and hitting spots.

MR. GOLDENBERG: That of course I do not agree to.

(The said film was viewed in open court but not stenographically reported, after which the following further proceedings were had herein:)

MR. GOLDENBERG: Your Honor, for what it is worth, the bearded gentleman in the film was Mr. Taggert.

THE COURT: Did that light pen serve the same function as the knob on the Michigan game?

MR. GOLDENBERG: That is correct, your Honor.

MR. ANDERSON: Your Honor, we object to this in the sense that it is noncross-examinable just like --

THE COURT: I didn't know that I was asking something

that would be a matter of dispute.

MR. GOLDENBERG: Will you disagree with that, sir?

MR. ANDERSON: Oh, I object to the film, not to the Court's question. I am sorry. I have no objection to the Court's questionabout how the RCA game was intended to be demonstrated on that Spectra 70 computer at the Sarnoff laboratory.

But the film itself, and the things that people said and what it showed, was not done at that time. We had no opportunity to interrogate the people who actually filmed it and --

THE COURT: You can never cross examine any photographic exhibits, can you?

MR. ANDERSON: You can't cross examine a film.

MR. GOLDENBERG: As I said when I introduced the question of the film, that each of the witnesses deposed testified that it was an accurate depiction of the game as played at the time of the demonstration or open house.

THE COURT: The objection will be overruled.

MR. GOLDENBERG: At this time we would like to call Casimer Dabrowski as a witness, your Honor.

CASIMER DABROWSKI,

called as a witness by the defendants herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. GOLDENBERG:

Q Mr. Dabrowski, will you state your full name and residence address, please?

A My name is Casimer Joseph Dabrowski. I live at 308 South Lewis Street, in Mount Prospect.

Q Are you employed, sir?

A Yes.

Q By whom?

A The Seeburg Corporation.

Q In what capacity?

A I am an engineer with the company.

Q Do you hold a particular position or title?

A Yes, my title is section engineer.

Q Could you state generally what your duties and responsibilities are as section engineer?

A At present my duties are in all the electrical projects that are associated with the company. Primarily rght now we have two major areas of interest: one is in relationship to the coin-operated phonograph, and the other area is working on electronic pinball machines.

Q All right, sir, could you, commencing with your graduation from high school, tell the Court your formal education beyond that point?

A Well, upon graduation from high school I spent three years in the service; at which time I got out of the service in 1943 -- I mean '46 -- I attended Wright Junior College from 1946 to 1948.

From there I transferred to Illinois Institute of Technology, from which I graduated in 1951 with a Bachelor of Science in electrical engineering.

Q Have you had any formal educational courses beyond that, sir?

A During the course of my career I have attended several of the weekly, what they call concentrated courses, which deal with digital design techniques, digital electronics, microprocessor designs, and also in order to keep up with the state of the art I have attended various courses that were put on by the societies such as the I.R.E., and so on, to keep the engineer that is working up with the state of the art.

Q Could you explain what the I.R.E. is?

A That is the Institute of Radio Engineers.

Q You used the word "microprocessor." Could you say what a microprocessor is?

A A microprocessor, in a general sense, is

considered as a very, very small computer. Of course, that is if you include the memory -- well, some microprocessors have memories.

Q Roughly, how small is a microprocessor?

A Well, I would say the chip itself is 1/16 by 1/16 of an inch or so, approximately.

Q And that device has the capabilities of a computer?

A Not the total capabilities. It is a small scale version of a computer. It does not have the capabilities of a large laboratory type of computer.

Q When you say it doesn't have the capabilities of a large scale, what is missing?

MR. ANDERSON: Your Honor, I would object on the ground of relevance. I don't think there is any issue as to microprocessors in this litigation.

THE COURT: Well, I take it this goes to proof that by 1968 you wouldn't have had to have a 20-foot long machine.

MR. GOLDENBERG: That is correct.

THE COURT: I think that has some relevance. I will overrule the objection.

MR. ANDERSON: Sir, I didn't hear part of the court's answer -- by 1968 you would not have what?

THE COURT: You would not have had to have a 20-foot long machine.

MR. ANDERSON: Is his testimony then, may I ask if his testimony relates to the state of the art in 1968 or is it something that is current? I think we ought to fix the time.

THE COURT: Yes, I think the date of the first application here or the date of the various applications are the dates that are pertinent to it.

BY MR. GOLDENBERG:

Q Were microprocessors available in 1968, sir?

A I don't believe so, not at that time.

Q When did they become available?

A I'm not sure, but I would say somewhere around 1970-'71 and through there.

Q Upon your graduation from the Illinois Institute of Technology, what was your employment and, in answering that, could you describe your employment experience up to present?

A When I first joined Seeburg, they were very heavily involved in military-type of work. And the first four years, until about 1955, I spent most of the time as the junior engineer in the menial tasks that a junior engineer usually is assigned, such as making up billing materials and doing assembly work for the senior engineers and so on.

When I was made into a senior engineer,

then, of course, I was given some light design work such as simple power supplies.

Q Could you speak up a little, sir?

A I was given some light design work such as power supplies. I remember one of the projects was to take an oscillator that was used with a transmitter for frequency-modulated transmitting, and I was assigned the project of trying to stabilize that over the temperature range that the military required.

Later on, when I was -- this was in about 1957 or so -- I was made a project engineer. And at that time, the early part of that time I spent writing proposals for new contracts that we were bidding on and supervising various individuals in the contracts that we had.

And in the early parts of 1960, Seeburg discontinued working on military contracts, and I was transferred into the commercial end of the organization. There I was -- which was into the music division of the company, actually the phonograph division. One of the first tasks that I was assigned there was to convert a lot of the vacuum-tube type of circuits that we were using then into transistorized versions.

Then, also during this period of time when I was still a project engineer, I designed a system

that was sold. And this system consisted of actually dividing the record magazine of a Seeburg phonograph into three sections, one that you cold select any of the three sections to play continuously, or you could select any record out of the three. And on this system I received a patent.

In about 1966, as a result of all this work, I was promoted to a section engineer. And at that time I started working on using the so-called RTL type of packages, which is the same thing as the little circuits that we're using in the games, except that they had the name of "resistor, transistor logic". The little ICs that we use in here, of course, are called TTL, which is transistor-transistor logic. Our object at that time was to convert a credit system that was primarily all consisted of gears and levers and everything else that was mechanical, we were to try and convert this to an electronic version.

We were very successful in this aspect, but prior to finishing-- well, we did finish the RTL/TTL, because, again, in 1967 and through there, those were the popular circuits.

We did make a breadboard of this. And about that time, a process called MOS appeared on the market.

Q Could you state what that is?

A That is Metal Oxide Silicon. This process permitted the use of a lot of parts or a lot of hardware on a very small real estate. In other words, you could get a lot of transistors into a very small area.

We worked with General Instruments on this. And they designed a special, what we called a large-scale chip for us, that not only contained all this logic that we were using with these little packages to implement our credit system on the phonograph, but also we converted all our remote transmission and local transmission and receiving of selections because as you make a selection, when you push a button on a phonograph, somehow or other you have got to tell that phonograph what selection to play. Well, all of that was converted into this LSI type of circuitry.

Q Was that done under your supervision, sir?

A Yes, it was. I had six people working for me at the time, and it was under my supervision. As a matter of fact, during my work on that, I did receive a patent on the credit portion, on one of the credit portions of the logic design of the credit system.

We had completed this project. I think this was completed in about the fall of '68, and we

went into market with our phonograph containing this system. And from there on in, between there and about 1973, most of the work involved at Seeburg was to make sure to improve on this sytem, to iron out a lot of the problems that do occur when you introduce something new like this. And then around August of '73, the management approached us and told us that we are to build these games for the electronic games for Williams Division.

Q By "these electronic games", could you be more specific as to what you are talking about?

A The Pro Tennis game was built first, and then a game called Pro Hockey was built after that.

Well, we were in production on that for a very short period of time; it was only about three or four months, maybe six months at the most. After that, then the project that I had was to convert the existing amplifier that we were using in the phonograph --

Q All right, sir, I would now like to inquire about the electronic games. Are you familiar with the electrical circuits and manner of operation of the game Pro Tennis?

A Yes, I am.

Q Are you familiar with the electrical circuits and manner of operation of the game Paddle Ball?

A Yes, I am.

Q Do you have any familiarity with any other games manufactured by Seeburg or any of its subsidiaries?

A Not to the extent as I do with those, but I do have a familiarity with the others.

Q All right, sir. Have you studied U.S. Patent 3,659,284?

A Yes, I have.

Q Have you studied U.S. Patent 3,659,285?

A Yes, I have.

Q Do you believe you have an understanding of the disclosures of those patents?

A I think I do, yes.

THE COURT: Do I understand that you participated in the design of Pro Tennis and Paddle Ball?

THE WITNESS: Not in the logic design. That was already taken care of. We just assembled all of the parts to make the final game.

THE COURT: All right.

BY MR. GOLDENBERG:

Q Mr. Dabrowski, do you have available to you a copy of the circuits diagram for Pro Tennis?

A Yes, I do.

MR. GOLDENBERG: Your Honor, that is Plaintiffs' Exhibit 21-B.

BY MR. GOLDENBERG:

Q My first question, sir, with respect to the Pro Tennis game is: Does this game include a television receiver?

A It includes a modified television receiver, yes.

Q What do you mean by modified?

A Well, that is where the front end and the i.f. or the video detector are disabled by removing tubes associated with those circuits.

Q Is that device capable of receiving broadcast television signals?

A Not in that state, no.

Q Did all games manufactured by Seeburg or its subsidiary, Williams, include modified television receivers?

A Well, I can only answer for the ones that I was directly involved in, and those I would say, that all of those were modified, yes.

Q All right. Could you describe the play of a game on the Pro Tennis device?

A I don't quite know what you mean by describe.

Do you mean how the ball hits one paddle and then --

Q Yes, sir, that is what I mean.

A All right.

After a coin is inserted into the game the ball will disappear from the face of the screen of the tube, and what will appear will be two paddles, and in the case of Pro Tennis, if you insert another coin you will get another set of paddles, which we call the inner paddles. First the outer paddles appear, and then secondly, the inner paddles.

Now, there is a button on the game which is labeled Start. If you push that the ball will reappear just a little to the right of center, and you don't know which direction it will reappear, and in which direction it will be going when it reappears at that time.

When the person on the right hits the ball it will reverse and change direction vertically, depending on where you hit the ball, on where the ball strikes the paddle, and it will proceed to go in the opposite direction until it hits an opponent's paddle. If it does not hit an opponent's paddle it will go off-screen on the left and a score will be scored to the opponent on the right. The game just keeps going back and forth like that, until a predetermined score of 11 or 15, that is optional, is reached.

Q After the ball goes off the screen to the right and the score is registered, where does the ball reappear on the screen?

A It reappears just a little to the right of center and it continues going to the right. If it left to the right, it will continue being served to the right. In other words, the one that missed the ball continuously has the ball served to him until he hits it.

Q Is there any need for the player to do anything to get the ball served again?

A No, that is automatic.

Q Does the ball always operate at the same speed?

A No, it does not. After a miss, and the ball is first automatically served, it will operate at a slower horizontal speed for the first four hits. Then it will speed up, in the horizontal it will speed up for another four hits, and then, finally, it will go to a third speed in the horizontal direction.

Q What is the purpose of that, sir?

A Well, that is, as the players get better and better at the game, you are trying to make the game a little bit more complicated by speeding up the ball.

Q All right, sir, would you state what elements or factors determine the direction of ball bounce after it has been hit by a paddle?

A What are the elements?

Q Yes, sir.

A Actually, there are two elements. There is what is known as a vertical ball counter and a horizontal ball counter.

Q Well, my question was --

A Actually, it is the vertical ball counter which determines the angle of it.

Q All right, sir, perhaps my question wasn't put too well. I used the word "elements" when I should have used the word "factors" in the game that determine the direction of the ball bounce.

A The factors that determine the direction in which the ball;will bounce are; one, where you hit the paddle with the ball and secondly, where the opponent's paddle is located, whether it is above or below the paddle that is being hit.

Q Both of those elements determine the direction of ball bounce?

A That is correct.

Q Could you explain more specifically how the factor of where you hit on the paddle determines the direction of ball bounce?

A Well, we have on -- I don't know what the exhibit number is --

Q It is 91-B.

A On Exhibit 91-B, in the lower left-hand corner, we have three blocks labeled -- two of them are labeled A-6 and one is labeled B-6.

Q Well, sir, I wasn't looking for you to get quite so specific on that point with respect to circuit elements. But where -- I believe there is on that drawing, 91-B, in the lower left-hand corner, some lines captioned "vertical paddle place" -- or do they not appear?

A Oh, yes. You mean the representation here of the paddle and a ball in the lower left-hand corner?

Q Could you explain what is intended to be represented by that little portion of the drawing, and if you can, in conjunction with that portion of the drawing, explain how the point at which the ball hits on the paddle determines the direction of its bounce?

A Well, what the drawing here is trying to represent is that the number of lines that the ball is made up of -- and actually the number can be 14 or 15, it depends -- and the other smaller segment symbol represents what the ball would look like.

Now, what it is trying to represent is that, since the point that determines coincidence is the lowest line of the ball, that is the one that will determine what happens. When that lines up with any of the, well, let's say, 14 lines on the paddle here, it will transmit certain

information or signal information into the circuit on the left, which eventually determines what the full adder, what the information going into the full adder is, and the full adder in turn determins what the vertical ball counter is set to.

Q Suppose the bottom line of the ball has coincidence with the top line of the paddle?

A The ball will have hit that, and then it will go in the upward motion.

Q Suppose the bottom line of the ball has coincidence with one of the middle lines of the paddle, what will happen?

A Well, when you are in the middle section it is rather hard to predict because the opponent's paddle as an influence and the angle at that point is so small that either you might be going up or you might be going horizontally, or you might end up going down.

Q Sir, were you in court when Dr. Ribbens testified that he did not believe that the position of the opponent's paddle had any influence on the direction the ball bounced?

A Yes, I was.

MR. ANDERSON: Your Honor, I object only in that I think that is an unfair characterization of the testimony. The testimony was only with respect to Exhibit 91-A, the paddle ball.

MR. GOLDENBERG: Well, your Honor, I believe the witness testified in a conclusory kind of way that all these games operated in the same fashion, did the same thing.

THE COURT: I can't remember, frankly, what it was.

BY MR. GOLDENBERG:

Q Let's direct the question to 91-B.

MR. ANDERSON: -A?

MR. GOLDENBERG: 91-A, I am sorry.

BY MR. GOLDENBERG:

Q Do you recall Dr. Ribbens' testimony with respect to Paddle Ball that the position of the opponent's paddle had no influence on the direction of ball bounce?

A Yes, I do.

Q Do you agree with that?

A No, I don't.

Q Could you state why you disagree with that and describe the circuit elements which, in your view, lead you to this disagreement?

A If we look at this section in the lower left-hand corner again --

Q You are looking at Paddle Ball now, sir?

A Yes, I am looking at Paddle Ball.

The blocks are identified as A6A, A6B and B6B. Now, when coincidence occurs between the ball and the paddle in the left-hand side of the screen, the symbol that is indicated as F9 with a bar over it is sitting what is known at a 1, which means that that permits that package to become active.

So if we look at these, we see that

information going into the top, what we call, NAND Gate is going back and it is being fed from the right-hand paddle, which is the opponent's paddle.

Q The right-hand paddle information, where is that coming from, sir?

A That is coming from the unit called a 7493. It is labeled A8. It is the terminal which is identified as B on that.

Q All right, sir, could you continue with your explanation?

A To repeat, since the ball was in coincidence with the paddle on the left-hand side and since this is going to the paddle on the right-hand side, depending on what B is -- and by that, I mean whether it is at a zero or a 1 -- will determine whether the ball bounces at a sharper angle in one case than in the other case.

If the right-hand paddle is above the left-hand paddle -- and by that, I mean, the left is in the lower left-hand of the screen and the right is in the upper right-hand -- B is sitting at a zero. However, if I were to take that paddle and lower it below the left-hand paddle --

Q Now, the paddle that you are lowering, what paddle --

A The right-hand paddle and lower it below

the left-hand paddle, that B would be sitting at a 1, which adds a different number to the preset of the vertical count.

Q Is the same true with respect to the game Pro Tennis?

A Yes, it is.

Q Does it differ in any respect?

A No, it does not.

Q Mr. Dabrowski, I believe you testified that you had studied the '284 patent, isn't that correct?

A Yes, I have.

Q In connection with that patent, did you study Figure 12A?

A Yes, I did.

Q Could you state, in your understanding of your study of that patent, what determines the direction of ball bounce after coincidence in the circuit of that patent?

A The thing that determines the direction of ball bounce is the potentiometer that is labeled 127, which would be either potentiometer 126 or 125 on there.

Q What do you mean those potentiometers determine the direction of ball bounce? How do they do that?

A Well, depending on which one is in control.

Q Assume one is in control. How does that

potentiometer determine the direction of ball bounce after paddle coincidence?

A It determines the amplitude of the signal that is going into Spot 3, which is called ball generator.

Q Is that the same thing as determining a voltage level?

A Yes.

Q Suppose, sir, one were to play a game as described in that patent and not attempt to control or move knob 127 after ball and paddle coincidence. What would happen to that ball?

A The ball would just bounce back and forth, that is all, between the two paddles.

Q Is there anything in the '284 patent, as you have studied it, which makes ball bounce from a paddle dependent upon where the ball hits on the paddle?

A No.

Q Is there anything in that patent, in your understanding, which makes ball bounce from the paddle after coincidence dependent on the position of the opponent's paddle?

A Let's see. From my understanding, the opponent's paddle is out of the picture after coincidence. Actually you have control of the ball.

Q In the game Paddle Ball, as shown in Plaintiff's Exhibit 91-A, is there any electrical circuit which determines the direction of ball bounce after coincidence by establishing a voltage level?

A Would you --

Q In the game Paddle Ball, as shown in Plaintiff's Exhibit 91-A, is there any circuit which determines the direction of ball bounce after coincidence with a paddle by establishing a voltage level?

A I want to answer that question with clarifications.

Q All right, sir.

A Obviously you do have to have a voltage level, but it is not dependent on what the amplitude of that voltage level is after you reach a certain amplitude.

Q Perhaps my question was not well put.

By changing the voltage level, is there any circuit in the Paddle Ball game which changes the direction of ball travel after coincidence by changing a voltage level?

A No.

Q How does that circuit work, sir?

A Actually what it does, it takes -- now, you are asking how the vertical or how the angle of the

ball is changed?

Q After coincidence.

A After coincidence.

The way that works is when you -- I don't know how much details you want me to go into here, but basically what we have is a counter that counts the number of vertical lines on display. What we do is if the counter -- well, during display time there are 246 lines that are displayed.

So if we set this counter at the count of 246, what would happen is that for each display, my counter would end right at the same point all the time. However, if I removed one count from this, the count would end one count short all the time. So that would have the apparent effect of moving the ball in one direction.

If I preset the counter one count more, it would do it in the opposite direction.

Basically what we do here is we preset this counter to different values, and that is how we achieve this vertical motion, which is one of the components for giving you the angle.

Q Is there anything in the courtroom which you might find useful in explaining this?

A Yes, as a matter of fact during the course of

the trial I was looking at this grid up here. I counted the number of squares there. There are actually 272 across.

If you were to start someplace in the middle, and if you counted to this end and then you went back there and started your count again, you would end up right in the same spot where you started counting from. You know, that is where the count would end.

Basically, this is what we do on the screen of the TV set. We start counting -- well, actually, this is in reference to the ball circuit. We start counting at some point, and we set the counter to a value. In the case of the horizontal direction, that value is 473 because there are 473 what we call bits in the display portion of the tube.

So if I set that counter at that value, I would just get a vertical line across the whole vertical portion of the tube.

Q Can you relate that to this grid?

A As an example, if I had a flashlight and I started here, and this flashlight had a wire that was going to the counter and I had a little button on this flashlight and every time I would pass one of these little squares I pushed this button and this would advance this counter one position, then when I got to the count of -- well, actually, let's take the count of -- because we are using this as an example -- so it would be 268.

When I got to the count of 268 the circuit turned on, which would then flash the light. The light would stay on for four counts. That would get me up to 272. Then I would restart the counter again.

So if I did that and if I could do it fast enough, what you would see would be just a white line across the ceiling that would be four of these little squares wide.

This is actually what we do in TV, is we do this type of counting.

If we make that counter only count to 273, that means it takes one count more. So therefore it would be like moving this spot in this direction. Every time I went through this cycle the line would actually have motion in this direction.

If I had the counter only count to 271, it

would move in that direction. That is how the motion is obtained on the ball.

Q Is horizontal motion obtained in the same fashion?

A Both. I was really probably describing the horizontal motion moreso than vertical because in the horizontal counter we only vary that by one count in each direction whereas in the vertical counter it is varied in some games as much as four counts in one direction. In Paddle Ball in particular it is four counts and in Pro Tennis it is only three counts.

What that does is give you a steeper angle after you hit.

Q How does the information about where the ball hits on the paddle and the position of the two paddles influence this count in the counter?

A As I mentioned before, you have to change the value to which the counter will count. I used the figure that we will count to 273 or 272 or 271 in the example, but in the case of the way it is done here, we actually do not vary the end figure that it would count to, but we vary the point from which it starts counting.

We preset it to a count initially and of course, if we set it to a lower value it takes one more count to hit the end point than if we preset it to a higher value.

THE COURT: I haven't followed, Mr. Goldenberg, how by this process you are able to move a light spot of a particular size. Obviously it is done, I take it, by starting to count at a particular place and stopping in another place, but if you count 273 counts, for instance, does that mean that you have a streak clear across the screen?

THE WITNESS: No, because the light is not on.

THE COURT: The light is not on. It goes on at 273?

THE WITNESS: No, actually, I turn it on -- because the ball is four counts wide I turn it on four counts before I hit that point. That is always constant, that four counts.

If it counts to 273, I turn it on at 269.

If it counts to 272, I would turn it on at 268.

BY MR. GOLDENBERG:

Q Mr. Dabrowski, could you perhaps do this? If you could, take the row of grids against the wall on this side of the courtroom -- it would be the left side -- and describe how one would make a spot, or, say, three horizontal lines long move down that horizontal bar.

A Let's assume that we were to start in the fourth large box and we would start with the first little square in that fourth large box.

Q I will tell you what, sir --

A Or shall we use the large ones?

Q Use the large ones.

A I think there are 34 of them.

Q I see, sir. When you said there were 272 --

A I was talking about the little ones.

Q If you take the big --

A If you take the big squares, there are 34 of them. So this means that I would have to have a counter that counts to 34.

If I start with this third square here, and I count to the end, obviously I am not going to hit 34 when I hit that end. I will hit 31. This will be 32, 33 -- well, did I say the fourth one I started or the third one?

Q The third one, I believe.

A All right, then I am back to the third one.

If I start the counter going again, I go all the way to the end. I come over here and that gets me back to count 34. So I have gone nowhere.

But now let's change the counter to 35 --

Q But in what you are describing, all of those lights are on now?

A All right, so what I want to describe then is let's assume that on the 34th count, I turn the light on, but I only turn it on for that count. So that means that one square will light up. In other words, if I count 1, 2, 3, 4, so on down the line and the light is off and I come back here, when I get to count 34, I turn the light on.

The thing that you have to remember, as you go down that way and you come back, you don't come back to that same row. You move over to the next one.

Q Let's assume we are staying in the same row for now.

A Then you will only have a light right in that third box.

Q Could you describe it, with that simple version, that this is a single spot that you want to move down that row?

A Again now let's assume that I start at that third square. Now I have changed my counter so it will occur on 35.

So I have gone all the way to the end. So this is count 32, 33, 34. Now the 4th square is lit.

Now I go again. The 5th one will light up if I repeat that, the 6th one, the 7th one.

So then what I will get is an apparent motion of the ball. If I can do this fast enough, it will look like the light is moving in that direction.

THE COURT: What is it that causes the light to go on?

THE WITNESS: Actually I am looking at this counter. The counter has signals coming out of it. When I have a **prescribed** set of signals, which is identified by the count 34 -- well, not in Pro Tennis but in this example by count 34 -- then it will turn on the light.

The counter turns on the light. It conditions the --

THE COURT: It turns on the video signal?

THE WITNESS: Eventually, yes. Let's put it that way, eventually, yes.

So that is the way it is done on the

games.

BY MR. GOLDENBERG:

Q If movement down the length of the courtroom of this light, the panels being successively turned on, were the way you get horizontal movement, is vertical movement obtained in the same way?

A That is correct. I have greatly oversimplified it.

THE COURT: That is the only way I can understand it.

BY MR. GOLDENBERG:

Q Did you find anything in the patent 3,659,284 which causes a spot to move across a screen of a television receiver in the same fashion?

I am sorry. I don't mean in the same fashion. I withdraw that.

Using the same circuit techniques?

A Using counting techniques, no. They used analog techniques.

Q In the game Pro Tennis, Exhibit 91-B, I believe, it is your testimony that that can be played in a two-player version or a four-player version?

A That is correct.

Q Could you describe what determines the direction of ball bounce from a paddle after coincidence

in the four-player version of that game?

A The ball bounce is really determined by the same elements as determined the ball bounce in the two-player game. However, the two paddles that had been added do not control the direction of the ball. It is the two back paddles that control direction, with the exception that they will reverse.

Q I am sorry. I am not sure I understood you.

Is it that the two back paddles do or do not?

A The two back paddles do control the direction of the ball at the time of coincidence.

Q Then the front paddles do not, is that correct?

A Only to the extent that they reverse the ball. In other words, if it is going from left to right, it will go from right to left.

Q I want to be sure.

But they do not control the vertical?

A No, they do not control the vertical.

Q Would it be correct then, with respect to the back paddles, where you hit the paddle does not determine the direction of ball bounce?

A Would you repeat that, please?

Q With respect to the back paddles in the four-player version of that game, where you hit on the paddle does not determine the direction of bounce?

A What paddle are we hitting?

Q I am sorry, I perhaps misspoke.

Where you hit on the front paddle does not determine the direction of bounce, is that correct?

A Does not determine the vertical direction of bounce.

Q Does not determine the vertical direction of bounce.

Assume the four-player game and a hit on the front paddle, and let's say, from the left-hand side. What does determine the direction of bounce?

A The rear paddle, where its location is, will determine the location of bounce and also the right rear paddle would determine the direction of bounce.

Q As a result of your study of the '284 patent, is there any comparable function or result in that paddle, as you understand it?

A In reference to the four paddles?

Q Yes, sir.

A No, I have not seen it.

Q Sir, have you had any occasion to study Patent No. 3,659,285?

A Yes, I have.

Q Does that patent disclose the use of counters for determining direction of spot or ball movement over the screen?

A No, it doesn't.

Q Could you describe with reference to Figure 12A of that patent, which is here as a chart as Plaintiffs' Exhibit 90, what does determine the vertical direction of ball travel after coicidence?

A It is either the potentiometer labeled 109 or 110, depending on which one of those two are the controlling potentiometers at that time.

Q What do those potentiometers do?

A They control the vertical components of the Dot 3 generator.

Q If one were to play a game with the circuit of that patent and not change the setting of those potentiometers 111 and 112, what would happen to ball travel after coincidence?

A You are calling 111 and 112 potentiometers? I think they are the knobs.

Q Forgive me, not change the settings of potentiometers 109 and 110.

A The ball would go back and forth with no vertical component.

Excuse me, it would have a vertical component. It would go back and forth, but it wouldn't change.

Q Suppose the player wanted to make it change, what would he have to do?

A He would have to change the controls.

Q Change what controls, sir?

A Actually potentiometers labeled 109 or 110, depending on what player it is.

Q From your study of Patent No. 3,659,284, and your knowledge of the Seeburg game, Pro Tennis, do you have any view as to whether or not they operate in the same way and use substantially the same means to get the same results?

A I would say that they do not use the same means for obtaining the results.

Q Do they get the same results?

A Not in all cases, no.

Q Could you specify the cases in which the results are different?

A In one case I see nowhere, if I were to strike a paddle, where it will go through the paddle and ignore it

and actually strike the opponent's paddle, like we have in our Pro Tennis. If the player on the right-hand side strikes the ball and the ball goes to the second paddle on the right-hand side, it will continue in the same horizontal direction. It will change in vertical direction.

To that extent there is a difference, but I don't quite understand what your question is in this respect.

Q With respect to the matter of ball bouncing from a paddle, do they function in the same way?

A No, let's take the '284 patent. The ball is continuously under player control; whereas the only time in the video games that the ball is under player control is at the time of coincidence. Once coincidence has been achieved, you have to wait until coincidence occurs again before anything can be done with the ball as far as the player participation; whereas in the '284 patent you have continuous control of the ball, or one of the players has continuous control of the ball at all times.

Q Is there anything in the '284 patent which causes the ball to change direction after coincidence which operates the same way as the circuitry of the Pro Tennis game?

A Are you asking are the means the same as far as -- if I can understand what you are asking, I would say that

the '284 patent primarily is using analog type of circuitry for achieving these results; whereas in the games we use the digital type of devices.

Q Is there anything in the '284 patent which makes ball bounce after coincidence a function of where the ball hits on the paddle?

A No, there is not.

Q Is there anything in the '284 patent which makes ball bounce after coincidence a function of the position of the opponent's paddle?

A No, there is not.

Q With respect to the '285 patent, is there anything in that patent which makes ball bounce after coincidence a function of where the ball hit s on the paddle?

A No.

Q Is there anything in the '285 patent which makes ball bounce after coincidence a function of the position of the opponent's paddle?

A No.

Q Is there anything in either one of those patents which uses a counter?

A In the patents?

Q In the patents.

A No, I know of no counter.

Q In your study of the '284 patent, did you become aware of any game or game circuit disclosed in that patent which did not provide for player control

of a ball after it had been hit?

A Which did not provide?

Q Yes.

A No, I did not see any game shown there that did not have the ball under control of one player or the other.

Q Would the same thing be true of the '284 patent?

A Yes.

Q Do you have a copy of either of the patents available to you?

A Yes, I have both of them.

THE COURT: Let's take a five minute recess.

(There was a brief recess, after which the following further proceedings were had herein:)

BY MR. GOLDENBERG:

Q Mr. Dabrowski, I ask you to turn to Claim 25 of the '284 patent.

Your Honor, Claim 25 of the '284 patent is the same as Claim 25 of the Reissue '507 patent.

THE COURT: All right.

BY MR. GOLDENBERG:

Q Mr. Dabrowski, among other things, that claim specifies "A means for imparting a distinct motion to said hit symbol upon coincidence."

Do you understand or have any understanding of what the phrase "distinct motion" means?

A Not the way it is spelled out in this context. I don't quite understand what they mean by distinct motion here.

Q I am going to give you a copy of Plaintiff's Exhibit 91-B and I ask you if you could not identify the elements which you believe are used in that circuit for generating what has been called a hitting symbol or the paddle?

A The circuits that are used for generating the hitting symbol on this drawing are identified in purple. I don't necessarily agree with that.

Q That is what I want you to do, sir. I want you to state your understanding of the circuits which are used to generate the hitting symbol.

A The circuit that is used for generating the hitting paddle is really, if we take the rear paddle as encompassed in this area that was identified before, only block A8, which really, in conjunction with A7 and B7, determines the height of the paddle.

Circuit H3, which is outside of the confines of that encompassed area, determines the width of the paddle, and the circuit labeled D2, which is the 7425, locates where the paddle is on the screen,

horizontal.

Q So in your understanding of that circuit, certain circuit elements are included within the purple outline which are not part of the means for generating the hit symbol and certain circuit elements are not included within the purple outline which are a part of the means for generating a hitting symbol, is that correct?

A That is correct.

Q It is my understanding that the exhibit has certain circuit elements outlined in orange which, according to Dr. Ribbens' testimony, constitute the means for generating a hit symbol or a ball.

Could you state whether or not you believe that to be correctly stated?

A I do not agree with that.

Q Could you state why, sir?

A Because the ball is actually generated in the circuit labeled "Ball Generator" on the drawing. It is called G1, which is the 7402, which is really the composite ball.

THE COURT: Where is that?

THE WITNESS: They have a yellow line starting at it.

THE COURT: I see, all right.

BY MR. GOLDENBERG:

Q Once again, would it be that circuit elements are included within the orange outline as generating the hit symbol which do not in fact generate the hit symbol?

A That is correct.

MR. ANDERSON: Your Honor, I am sorry. I lost the question and answer before this one, specifically what component the witness was referring to.

BY MR. GOLDENBERG:

Q Mr. Dabrowski, could you state again what --

A It is the component that is labeled "Ball Generator," and it has a yellow line terminating right at it.

THE COURT: Marked 4.

THE WITNESS: That is right.

BY MR. GOLDENBERG:

Q That circuit also outlined in the orange is the means for ascertaining coincidence between said hitting symbol and said hit symbol. That is outlined, I believe, in the dotted line orange near the top of the drawing.

Do you see that, sir?

A Yes.

Q Do you have any view as to whether or not the circuit components included within that block are in fact the means for ascertaining coincidence between the hit symbol and the hitting symbol?

A Yes, they are in that area, I would agree.

Q Also outlined in the dotted line, orange, to my understanding, is the means for imparting a distinct motion.

A Again, I don't know what is meant by distinct. This does not impart a distinct motion.

On the games the motion is --

THE COURT: When you say it doesn't impart a

distinct motion, what do you mean by distinct?

THE WITNESS: It is a predictable motion. To me distinct means that I know exactly which way it is going.

In the games you have an idea where it is going, but exactly where it is going and especially when the ball is hitting in the center portion of the paddle, you have a very difficult time in predicting even whether the ball is going to be going up or down.

The angle won't be great when you hit around the center portion, but there will be some angle.

THE COURT: This is in Paddle Ball and Pro Tennis, the same thing in both?

THE WITNESS: Both games, that is correct.

BY MR. GOLDENBERG:

Q If we put the matter of distinct aside and simply consider it a means for imparting motion upon coicidence, do you agree or disagree with the blocks which are supposed to outline or enclose the circuit elements which perform that function?

A No, I do not. Actually the package that is labeled 9316, which are just above the ball dot, what we call the ball generator, are the two that are counters, really. It is the one labeled B-3 and A-3, is the vertical ball counter and the one labeled G-7 and H-7, in conjunction

with G-6 are the horizontal ball counter.

Depending on what these counters are pre-set to will determine the motion of the ball.

BY MR. GOLDENBERG:

Q Now, sir, I note that on the exhibit, toward the center bottom, there is an orange outline which bears the label "Impart Distinct Motion, Horizontal" which includes three elements, all H-4 and bearing the component designation 7500. Are those the elements which impart the --

THE COURT: Do you mean 7400?

MR. GOLDENBERG: 7400, I apologize.

BY MR. GOLDENBERG:

Q Are those elements which impart the distinct motion to the ball?

A No, they are not. As I mentioned before, elements G7 and H7 are the ones that -- and G6 -- that determine what the horizontal motion of the ball will be. All three of those packages is what is known as a horizontal ball counter.

Q What is the role of the three elements H-4, also designated 7400?

A The three elements designated 7400, what they do is they preset the counter to one of three values, either -- and I'll use decimal values here. If we preset the counter to a decimal value of 10, I will have no horizontal motion.

Q You will have no horizontal motion?

A No horizontal motion. If I preset the value of the counter to 9, I will have motion to the right. And if I preset the counter to the value 11, I will have motion to the left.

Q Now, sir, I note on the left-hand side of the drawing that there is another block outlined in dotted orange which is apparently intended to have been associated with the legend, "Impart Distinct Motion, Vertical". Do you have an opinion whether that outline is correct or incorrect?

THE COURT: I think we already did that one.

MR. GOLDENBERG: I'm sorry. I, perhaps, wasn't following as closely as I should, your Honor.

THE COURT: If we didn't, then I'm further behind than I think.

BY MR. GOLDENBERG:

Q All right, sir, I would like you to look at Plaintiff's Exhibit 91-A, which is Dr. Ribbens' marked drawing with respect to Paddle Ball. And I would ask you to take just a little bit of time or whatever time you believe is necessary and familiarize yourself with that.

Do you recall, sir, the questions I have just been asking you about the markings on Exhibit 91-B

and the answers you gave with respect as to whether or not, in your view, those circuit components were marked in the colored blocks correctly or incorrectly?

A Yes, I do.

Q If I were to ask you the same questions about the markings on Plaintiff's Exhibit 91-A, would your answers be the same?

A Well, I see that on this one here, the one that he has got marked in purple, he did include the section that does determine the paddle width, whereas on the other one, if I remember correctly, that was not included.

Q All right, sir--

A He is also -- well, no, he does have the timer and the delay network. No, he does not have that on there.

Q Well, perhaps it would be best if we got specific answers with respect to each one of these. So looking at the parts outlined in purple on Exhibit 91-A, which you have in front of you, do you agree or disagree that included within the box, the purple block, are the means for generating a hitting symbol?

A I disagree.

Q And could you state why?

A The element labeled 555 is not part of the

means for generating the hitting symbol. But the remaining that is in there, I would agree with.

Q The element 555?

A That is labeled B-9 on that drawing. It is a timer.

THE COURT: It is a timer, you say?

THE WITNESS: Timer, yes.

BY MR. GOLDENBERG:

Q Could you explain what that timer does, sir?

A Well, in this application, what it does, it prevents the paddle from being generated until a predetermined time as established by the potentiometer on the left. And that, actually what it does, it places the paddle vertically with respect to the top of the picture.

Q All right, sir--

THE COURT: Well, if it does that and places it vertically, why isn't it part of the mechanism for producing the hitting symbol?

THE WITNESS: Well, it doesn't produce it because, if I didn't have it, I'd still --

THE COURT: It places it rather than produces it?

THE WITNESS: That is right. If I didn't have it, I could generate the paddle.

THE COURT: All right.

BY MR. GOLDENBERG:

Q All right, sir, would you look at the parts outlined in orange, I believe, and state whether or not you agree that those are correct with respect to means for generating the hit symbol or the ball?

A Well, that encompasses a great deal in there, and I'll have to agree that parts that are -- since the ball G-1-B is the ball generator and since it is in that area, that is the only thing that I can say that is really --

Q Well, does it include parts which do not have to do with the generation of the ball?

A Yes, it does.

Q Do you agree or disagree that the parts included within the dotted orange block which are associated with the legend, "Hitting Coincidence" are the parts in the circuit which perform that function?

A Yes, there I have to agree, they do.

Q Does it include all of the parts which perform that function?

A Yes, those two parts perform that function.

Q All right, sir.

THE COURT: That is the solid orange?

THE WITNESS: No, that is the dotted one, the little thing there. It is called "Hitting Coin-

"cidence."

THE COURT: How do you know where that is? There is no arrow there.

THE WITNESS: I have it on mine.

THE COURT: Do you have one with an arrow?

MR. ANDERSON: Let me trade with you, your Honor.

THE COURT: I'll just draw an arrow here.

Q All right, sir, directing your attention to the dotted orange blocks, which are associated with the legend "Impart distinct motion, vertical," and "Impart distinct motion, horizontal". Do you agree or disagree?

A I disagree.

Q Can you state why?

A Well, first, the items that determine the vertical motion are really items B-3, which is 9316; A-3, which is identified as a 9316. The items that determine the horizontal motion are blocks G-7, which is also a 9316; A-7, a 9316; and G-6-B, which is a 74107.

THE COURT: I didn't follow you closely enough to know whether you are saying that all of the things that do it are left out of the box.

THE WITNESS: No, the things that are in the box, there are other things in the box besides, which do this.

THE COURT: Oh, the right things are in there, but also it includes things that shouldn't be?

THE WITNESS: Right.

THE COURT: All right.

THE WITNESS: Wait, no. I take that back, your Honor. We were talking about the area that is within the dotten lines, "Impart distinct, vertical," and "horizontal motion," and they are not included within

in there.

THE COURT: Yes. For instance, when you talk about the horizontal motion, you said a G-something or other.

THE WITNESS: Yes, G-7, which is just below that dotted area that they identified as doing it. Do you see the dotted square where they have --

THE COURT: Yes, those are all 4700s there?

THE WITNESS: Yes. Now, just below there is a block labeled G-7, a 9316.

THE COURT: Yes.

THE WITNESS: And then to the right of it is H-7, and to the right of that is G-7-B.

THE COURT: Yes.

THE WITNESS: Now, this is what is known as a vertical ball counter.

THE COURT: What is done by the 7400s that are in the dotted box?

THE WITNESS: The 7400s condition the counter as to whether it is going to count either 9 or 11 or 10.

BY MR. GOLDENBERG:

Q What happens if it counts 10?

A There will be no horizontal motion.

Q What happens if it counts 9?

A If it counts 9 -- let's see, we have to count one

more -- so the motion will have to be to the right.

Q If it counts 11?

A It will have to be to the left.

Q Do you know whether or not Seeburg or any of its distributors have ever made or sold a baseball-type game?

A To my knowledge I do not know of any such game.

Q In any of the Seeburg games is there any means provided for a player to serve a ball after the first serve, which commences the playing of the game?

A No, that is all automatic.

Q All right, sir, I would ask you to turn to Claim 1 of the '285 patent.

MR. GOLDENBERG: Your Honor, Claim 1 of the '285 patent is the same as Claim 1 of the '598 reissue patent.

BY MR. GOLDENBERG:

Q As a result of the day-to-day practice of your work, Mr. Dabrowski, have you come to any view or understanding of what is meant by the phrase, "coupling a signal from one circuit to another circuit"?

A Yes, I have.

Q Could you state what that understanding is, sir?

A Coupling is a means by which you actually take information from one circuit and transfer it to another

circuit.

Q Well, if a signal has a particular set of qualities associated with it, as for instance amplitude or shape, when you couple it from one circuit to another, is that -- are those qualities preserved?

MR. ANDERSON: I object, your Honor. I think Mr. Goldenberg is leading the witness at this time.

THE COURT: Overruled. You almost have to to get what you are after here. No, I don't mean, what you are after, in terms of Yes or No, I mean in terms of directing his attention to the subject matter.

BY THE WITNESS:

A Well, there are various forms of coupling. You can couple one circuit to another and have the output altered, yes.

BY MR. GOLDENBERG:

Q I am speaking of when you talk of coupling a signal --

A Well,"signal" is a broad term.

Q -- from one circuit to another circuit.

THE COURT: Let me ask a question: Does the term "coupling" have an established meaning in the electronics field?

THE WITNESS: Yes, it does. It means if you couple a circuit it will react in a predictable manner when

you couple, or will react.

THE COURT: Well, you are describing the results of a coupling. What is the act of coupling. What do you do when you couple?

THE WITNESS: Well, you either hook a wire up or you can hook an amplifier up. There are all types of things --

THE COURT: Well, that is mechanically. What do you do functionally?

THE WITNESS: You transfer information from one circuit to another.

THE COURT: Now you are back to that. Really, all I want to know is whether the word is a word of definite signification. If it is, that is one thing; if it isn't, every person is entitled to his own opinion on it, I don't think we are getting very far.

MR. GOLDENBERG: I think that is the way it ends up, your Honor.

BY MR. GOLDENBERG:

Q Do you know whether or not all of the games manufactured by Seeburg or its subsidiaries, or on behalf of those companies, use modified television sets?

A The only one I can think of is the games that I was involved with, and all those were modified.

Q Do you know whether or not any other games use

something else, other than --

A We used video monitors, also, in some of our products which did not require modification.

Q Oh, I am sorry, you did use video monitors in some of the products?

A Yes.

THE COURT: Some of the production of games in question here?

THE WITNESS: If the Pro Hockey game is in question, yes.

BY MR. GOLDENBERG:

Q And the Pro Hockey game is in question.

How does a video monitor differ from a TV set, modified or unmodified?

A Well, actually if you -- really what it boils down to encompasses the video section, the sound section and the sync sections, as we were using them, of the TV set. So, really, if you talk in terms of the modified TV set and the video monitor, they are identical.

Q What doesn't a video monitor include?

A We had no provisions for receiving radio frequencies over the front end. We had no i.f. amplifier and we had no video detector.

THE COURT: But is that the same thing as you meant before when you talked about modified TV sets?

THE WITNESS: That is right. As far as we were concerned, they did not exist because we weren't using them.

BY MR. GOLDENBERG:

Q Do you have any view, sir, as to whether analog and digital circuits techniques are the equivalent of each other?

A In the technical sense, yes, they are not

equivalent.

Q Could you explain what you mean by that?

A Well, there are characteristic differences between digital circuits and analog circuits. Although, you might receive some identical results using either one or the other. The economics, the accuracies involved and various factors of that nature would determine whether you used one or the other.

Q Would those two factors be the same for both analog and digital, is that what makes the difference? I'm not clear on that.

A Well, no. One is the -- the analog is generally a smooth transition type of circuit, whereas the digital is based on pulses, really. Either a pulse is there or it isn't there. So, actually, that is what the name comes from, digits.

Q Do you have any view with respect to the games that have been the subject of testimony here as to whether there is any difference, depending on whether one uses analog circuits or digital circuits?

A Oh, yes, I think there is a tremendous difference.

THE COURT: Excuse me, may I have that question read back? I didn't get the first part of it.

(Whereupon the record was read by

the reporter as requested.)

BY MR. GOLDENBERG:

Q Could you explain the basis for that answer, sir?

A Well, in the areas of, say, stability, the application here is much more conducive to using digital type of techniques. With the advent of the large-scale integrated circuits as they exist now -- of course, we're talking back in '68, because there is such a tremendous change in technology that is occurring, the economics at this time are better using digital techniques, whereas four or five years ago analog techniques might have been more economical. And as I mentioned from the power supply stabilities, also from the frequency restrictions, although this could or could not be an influencing factor. There are all these things that have to be considered between the two games as to the differences.

Q Could you explain what you mean by "power supply stability"?

A Well, the timing is established in digital -- I mean in analog type of circuitry, is very critical to the voltages that areapplied to these type of devices. And they do require that you do have rather accurate power sources going through them in order to have re-

liability or accuracy, I should say.

Q Does that same situation exist when one uses digital circuits?

A Not to the extent that with analog. You have more flexibility in power supply variations. Of course, everything has a limit, but the timing since you are counting and things like that, timing is not a function of any ramp or something that is time dependent, so you don't really have that kind of a problem.

MR. GOLDENBERG: Your Honor, we have no further questions.

CROSS-EXAMINATION

BY MR. ANDERSON:

Q Mr. Dabrowski, as I understand it, you have read the reissue patent 28,507 and feel that you --

A No, I have not read that.

Q You have testified about --

A Not the '507.

Q Have you not referred to this circuit diagram?

A I have testified about the '285 and '284.

Q I think Mr. Goldenberg will agree that the disclosures are the same in those two diagrams.

A Okay.

Q You see, we only have a chart of '507. That is what Mr. Goldenberg used; that is what I'll use.

Now, I think you are aware of what this signal, this waveform, looks like that comes out of the end of the summer, are you not?

A Yes.

Q You are familiar with that waveform?

A As far as the '507, yes.

Q All right. Now, am I correct that, coming out of the circuit, as taught in both of the patents that you have read that are in suit, if there are two white dots on a dark field, that waveform that would come out would have vertical sync information and horizontal sync information and some video information that would represent the two dots, is that correct?

A That is correct.

Q And is Plaintiff's Exhibit 87 along the top there a reasonable representation of what that composite video would look like?

A It is.

Q As it comes out of the games of the patents that are in suit.

I have now placed on the easel Plaintiff's Exhibit 91-A, which is the Paddle Ball circuit diagram. On that Dr. Ribbens put in red, blue and yellow lines just as he did in the chart of the patents in suit. Were you aware of those colored lines on there as you

studied these circuit diagrams?

A Yes.

Q Now, there is a place marked "Video" at the top of 91-A. Is that the composite video output for the game Paddle Ball?

A Yes, it is.

Q And am I correct that for the two paddles on the field in the game Paddle Ball, that composite video would have exactly the same appearance as shown in Exhibit 87? It would have vertical sync and horizontal sync and video information to display two white spots on a dark field?

A Yes.

Q There would be absolutely no difference, is that right?

A No difference between what?

Q Signal output for the games described in the two patents that you read and the signal that would come out the output for the Pro Tennis or Paddle Ball for two spots?

A Would the signals look exactly the same?

Q Substantially the same.

A Substantially, yes, not exactly.

Q All right. Now, am I correct that the way that signal that comes out of both game boards in suit

suit and in the accused games, the circuit uses a timed relationship between the horizontal and vertical pulses and the video pulses to locate the paddles on the screen?

A Now, are you talking about the games or the --

Q In both, there is no difference, is there?

A In both patents, you are talking about?

Q Both patents and in the accused games, isn't it a fact?

A Well, I question this time relationship thing. Indirectly we would say, maybe time is used in the video games, but not to the direct extent as it is here.

Q You mean in detailed circuits that are in the center of the board somewhere?

A Yes.

Q Now, I am just talking about what comes out of the end of the board at the place marked Output, and is applied to the input of the television set. Now, that would look exactly the same or substantially the same in the two circuits of the patent in suit and the accused games, am I correct? I think you have already indicated that that is true.

A Yes, not exactly.

Q Not exactly. I think we were at the point still referring to this signal, as shown in Exhibit 87, isn't it a fact that in both the accused games and the patents in suit, the timed relationship between the yellow portions representing the spots, the paddles, and the synchronizing pulses shown in red and blue in Exhibit 87, that timed relationship locates the paddles on the screen in both the accused games and the patents in suit?

A Yes. O.K., I'll agree with that.

Q And isn't it a fact that in both the accused games and the patents, the way that you move the paddle up and down is by rotating a knob that changes a resistance?

A That is correct.

Q And in both the patents in suit and the accused device, when you rotate that knob isn't it a fact that you change the location of the pulses relative to this vertical sync pulse? In other words, this yellow pulse, instead of being shown where it is on Exhibit 87, might not occur until the next position. This one might be blank? That is the way you move the spots down on the screen?

A Yes.

Q And that is exactly true in the same respect in the accused products and in the patents, is that correct?

A We do move the paddle vertically that way, yes.

Q You do move the paddle vertically in that way, and you use a change in the timed relationship, the timing of this vertical sync and the generation of the first paddle pulse -- change that time relationship to move the paddle up and down?

A Yes, we do, yes.

Q And that's true in exactly the same sense in both of the accused games, and in the patents that you read?

A That is correct.

Q That is correct.

Now, is that signal, as you understand it, an analog signal or a digital signal?

A The end signal?

Q Yes, the one shown in Plaintiff's Exhibit 87.

A Let's see, it is all in the same direction, it is all pulses. This could be classified as a digital signal, yes.

Q So in that sense at least, the patents that you have read, that are the patents in suit, are digital?

A No, only the end results that it produces could have a digital representation, yes.

Q And in that sense they are digital?

A What, the signals?

Q The descriptions of the patents in suit and the signals, yes.

A The signals are, but I don't quite understand what you mean by descriptions. Of the signal?

Q No, the signals of the circuits in the patent, explaining circuits for getting an output that is, by your definition, digital, is that correct?

A I didn't define that. I said it could be digital.

Q It could be. And if the signals generated by the patents in suit are digital, then the accused games have an output that is digital also, am I correct?

A Yes, our output is digital.

Q Conversely, you said that if the output of the patents in suit was not digital, then certainly the output of the accused games would also be not digital?

Q Now, again referring to the drawings of the patents in suit, I think you have indicated that you had read them. And am I correct that the knob 131 in the figure 12-A of the drawings of the first patent, '284, which you read, is a player-controlled knob which changes a resistor?

A That is correct.

Q And am I correct that in that patent description which you read, the '284 patent, that resistor caused the generation of some sort of a pulse related in time to the horizontal sync pulse?

A I don't think that resistor does it. It actuates a circuit that does it, yes.

Q It is coupled with a circuit that does it?

A Right.

Q And am I correct also that in the accused games there is a potentiometer with a knob, for example, the one marked Left in Plaintiff's Exhibit 91, which functions in the same way as the knob 131,to cause one of the paddles, the left paddle, to move up and down on the screen?

A That is correct.

Q And it does it the same way, by varying a resistor, a potentiometer?

A That is correct.

Q That is correct, and it does it in the same way,

by applying that resistance output or the voltage generated by varying that potentiometer to this thing that you called the 555 timer, is that correct?

A That is correct.

Q And the 555 timer is intended to generate a time delay from horizontal pulse to a later time where a pulse is generated representing the position of the left paddle as outlined in the hitting symbol, is that correct?

A No. I don't know if you meant to say horizontal. It is from the vertical.

Q I am sorry, I misspoke. You are absolutely right, it is relative to the vertical pulse that the 555 timer generates a time delay and then generates another pulse timed relative to vertical sync to cause the player symbol to appear at the right height, the desired height of the player?

A No, I don't think I quite agree with your statement there. The timer only really generates one pulse.

Q The timer only does what?

A Generates one pulse, or actually it removes -- the pulse disappears, the output disappears.

Q The output disappears?

A Right.

Q And when does the output disappear?

A It disappears when the voltage at points 6 and 7 reach a predescribed level.

Q And that voltage at points 6 and 7 is a voltage like a sawtooth, is that correct?

A That is correct.

Q So what the timer does is it takes a sawtooth wave, much in the nature of the slicer signal wave, it looks like that, in the patent that you read, the '284 patent, and it applies a variable fixed voltage that the player adjusts, and compares those to generate a single change in state at Q in the nature of an output pulse or output change of state?

A That is correct.

Q And that pulse represents what?

A That pulse would really represent -- say it acts as a switch that tells the paddle generating circuits, or the counter, 7493, to start counting.

Q And it represents the time at which it is to start counting?

A Yes, from the top of the screen.

Q The time represented by that timer is time relative to the vertical sync at which the counter is to start counting to draw the player paddle, is that right?

A That is right.

Q And that is a time delay relative to vertical sync, is that correct?

A That is correct.

Q And how is the vertical sync information placed into the hitting symbol generator so that the circuit knows what that timed relationship is?

A Wait a second. You are calling this the hitting symbol generator. I don't consider the timer as part of the hitting symbol generator.

Q You do not consider the timer, 555, a part of the hitting symbol generator?

A No, it only actuates the hitting symbol.

Q It locates the hitting symbol on the screen, is that right?

A Depending on when it activates it, it locates it.

Q All right, where is the vertical sync information placed into that circuit?

A That is going into pin 2, which is labeled "Trigger".

Q Pin 2 of which device?

A Of the 555.

Q Of the 555. So the 555 uses vertical sync information at pin 2, and it uses the player-controlled voltage at pin 5 to generate a time representing the vertical location of that player on the screen?

A The paddle, you mean?

Q The player paddle, right.

A Right, thank you.

Q Is that circuit an analog circuit or a digital circuit?

A That is an analog circuit.

Q So the accused games use an analog circuit to locate the player symbol or paddle vertically on the screen?

A That is correct.

Q Now, isn't it a fact then that the only respect in which the Paddle Ball circuit of Exhibit 91-A or any of the other accused games is digital is an intermediate technique for just processing this timing information that is generated at the hitting symbol to 555 and ultimately ends up as analog or maybe digital information, but at the output?

A I would say all the means in there are digital, yes.

Q And they are merely ways of measuring time, to handle this timing information that is generated by the 555, for example, in a fairly efficient way, is that right?

A Actually, I don't know whether -- would you repeat that, please.

THE COURT: Would you read it back.

Q (Read by the reporter.)

BY THE WITNESS:

A Not as far as the whole game is concerned, no.

BY MR. ANDERSON:

Q Do the counters that you have described on direct examination in generating a hitting symbol on the screen from the information that the player puts in on his potentiometer have any function other than relating video information, horizontal sync and vertical sync in a timed relationship and maintaining that timed relationship so that it could be converted into a composite video at the output?

A Do the counters have this --

Q Do they have any other function?

A Yes -- well, no. Okay, you mentioned that they generate these symbols and so on.

I agree. That is what they do.

Q They are just a technique for measuring and manipulating time intervals, is that correct?

A Not necessarily measuring time intervals; no, that is not correct.

Q They are not measuring time intervals, only manipulating them?

A No, no, they are not even manipulating time

intervals.

Q What are they doing then?

A They are counting really. They are counting the events that took place.

Q They are counting to measure time intervals between horizontal sync and vertical sync and video information, aren't they?

A Not really.

Q Are they generating time intervals? Is that a term?

What term would you use to relate the timed relationship between, say, the player 1 pulse and the vertical sync in terms of the count?

A In terms of the count?

Q Yes.

A I would use the term count. In other words, there are so many counts after the vertical sync has occurred that the pulse appears so many counts after that.

Q The number of counts represents the time interval?

A The number of counts represents the time interval?

Q Between vertical sync, for example, and the beginning of the player number 1 symbol, as just one

example.

A It could. It is not necessarily that it be that, but it could.

Q But it does do that in the accused games, doesn't it?

A I am not sure that it does, to be truthful.

Q Does the count have any other function other than to locate symbols on the screen in the accused games?

A Yes, it generates the symbol.

Q It generates signals?

A Symbols.

Q Symbols?

A Right, both the paddles and the ball.

Q It generates symbols by first telling the complete video out here where the screen should turn white, and then it tells it how long it should stay white, and then that it should become black at timed intervals, is that right?

A It does this based on -- well, actually what I am getting at is if I have a counter and I set that counter and at the same time I tell something out in the television receiver to start moving and if the counter counts and then does something and if this thing has moved in a prescribed period of time, then I will agree with you, that it is time related in that respect;

but a counter does not necessarily have to be time related.

Q But in the accused games, don't the counters count just like a clock does?

A Like a clock?

Yes, they go back and forth like the pendulum on a clock.

Q In fact, on the accused games, I think you referred to the source of the counters as clocks, is that right?

A The thing that drives the counters is a clock.

THE COURT: What is the difference between a counter and a timer in these games?

THE WITNESS: That is what I am trying to state here.

MR. ANDERSON: In these games, right.

THE WITNESS: A counter actually counts events. A timer really measures; you might say it measures time. It does something in a matter of time.

THE COURT: You have used the word "timer" and the word "counter" in connection with the accused games. Are those two different elements?

THE WITNESS: Yes, a timer and a counter are two different elements, yes.

THE COURT: I am not sure I understand the difference. You have been talking about a counter. I follow you there.

What does a timer do?

THE WITNESS: A timer, actually what it does as used here, depending on -- actually, it measures time, really, a timer does. It takes a certain period of time for the voltage on the input to the timer to reach a threshold and, therefore, that is where it gets its name because it is time dependent. That circuit will trip after a prescribed period of time.

THE COURT: By a counting method?

THE WITNESS: No, not by counting, no.

THE COURT: I see. The timer doesn't count?

THE WITNESS: No, it doesn't count.

THE COURT: All right, how does it time, if it doesn't count?

THE WITNESS: The same way they time here, through analog.

THE COURT: I see. So that is an analog timer?

THE WITNESS: That is right.

BY MR. ANDERSON:

Q When you say the same way they time, are you referring to the 555 counter in the accused game, such as Paddle Ball?

A Yes, I think we established that I agreed that your paddle is placed vertically in the same manner as in the Paddle Ball game.

Q With respect to the counter again, the counter does act like a clock, it measures time like a clock, is that right?

A If you wanted to use it in that manner, yes, you could.

Q Then by ticking off counts, just like seconds, you have a certain number of counts or seconds and that

determines a time interval. Ten counts is 10 seconds, just as an example?

A Yes.

Q In the accused games that period of time also determines how far down on the screen the electron beam has moved at the time that you start to draw the paddle, is that correct?

A That is correct.

Q So the counter in that sense is measuring the time or determining the time at which the paddle should start to appear on the TV screen relative to the vertical sync pulse?

A I would say it is not measuring the time, but it just so happens that it takes a prescribed period of time to go through this count, as determined by the clock, and the two do occur at that time, yes, sir.

Q It is determining the time or controlling the time. What word would you use at that point to relate those two events?

A I would say that since it does take a certain period of time to get that count, that in that respect it is time-dependent, right.

THE COURT: Is the reason that you preset it for a particular count because you have predetermined that you want a particular time to elapse, which time

corresponds to the number of counts you know will occur during that period?

THE WITNESS: Yes, that is true.

THE COURT: Why don't we -- unless you are right in the middle of a question --

MR. ANDERSON: No, as a matter of fact I was going to change subjects, your Honor.

THE COURT: All right, let's recess then until 9:30 tomorrow morning.

We will give it a last gasp tomorrow and see how far we get.

What is your best guess, Mr. Goldenberg?

MR. GOLDENBERG: I have little doubt that we can finish the direct examination of my last witness tomorrow.

MR. ANDERSON: We will not be too long with Mr. Dabrowski.

THE COURT: I was thinking if we could finish the evidence tomorrow, that would be good. That would then give me some time to review this, and then you can finish the argument on Wednesday. If not, we will finish this on Wednesday and then you can argue the following Wednesday, although I think for the benefit of everyone concerned, the sooner we can --

MR. ANDERSON: We do have people who travel, and it

would be helpful.

THE COURT: Not only that, but from the standpoint of preserving all the work that has been done here and having it translated in some fashion into an end product --

MR. GOLDENBERG: I have no doubt that we will be able to finish the testimony of our last witness tomorrow. I cannot, of course, speak for Mr. Anderson and his cross.

THE COURT: There is one more witness besides Mr. Dabrowski, is that correct?

MR. GOLDENBERG: Yes, sir.

THE COURT: Then what about rebuttal? Are you presently anticipating any, Mr. Anderson?

MR. ANDERSON: That is very hard to say, your Honor. I think we have tried to begin rebutting in our direct case. Therefore, I can't say how much we might have. We will certainly keep it to an absolute minimum.

THE COURT: All right, we will recess then.

(Whereupon an adjournment was taken until the following day, Wednesday, January 6, 1977, at the hour of 9:30 o'clock a.m.)